

**What is claimed is:**

1. In a laser scanning microscope with an AOTF in the laser input-coupling beam path, an improvement comprising a temperature gauge being provided in one of the environment of the AOTF and the vicinity thereof and connected therewith.

2. In a laser scanning microscope with an AOTF in the laser input-coupling beam path, an improvement comprising means for one of cooling and heating at least one of the AOTF and its environment.

3. The laser scanning microscope according to claim 2, wherein said means for one of heating and cooling includes regulation to a constant value.

4. The laser scanning microscope according to claim 3, wherein heating is carried out to a value above expected laboratory conditions.

5. The laser scanning microscope according to claim 4, wherein the value is above 35 degrees Centigrade.

6. The laser scanning microscope according to claim 2, wherein a temperature gauge is at least one of provided in the environment of the AOTF and in the vicinity thereof and connected therewith.

7. The laser scanning microscope according to claim 6, wherein the temperature gauge is connected to one of heating and cooling means by an electronic control for regulating the temperature.

8. The laser scanning microscope according to claim 1, wherein the temperature gauge is connected with a driving unit for the AOTF.

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